

WHAT IS CLAIMED IS:

1. A semiconductor laser module comprising:
  - a stem base having a top surface and bottom surface;
  - 5 a submount provided on the top surface of the stem base;
  - a laser diode mounted on the submount;
  - a photodetector placed, below the laser diode, on the stem base;
  - 10 a first lead pin for supplying a normal-phase current to the laser diode, the first lead pin extending through the stem base; and
  - a second lead pin for supplying a reverse-phase current to the laser diode, the second lead pin extending through the stem base,
  - 15 wherein the submount has an aperture in which the photodetector is at least partially disposed.
2. The semiconductor laser module according to claim 1, wherein the aperture extends through the submount and is open where the aperture faces the stem base.
- 20 3. The semiconductor laser module according to claim 1, wherein the aperture is a recess formed on an edge of the submount, the recess being open where the recess faces the stem base.
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4. The semiconductor laser module according to claim 1, wherein the laser diode and the photodetector have a common optical axis.

5 5. The semiconductor laser module according to claim 1,

wherein the laser diode has an anode and a cathode, and

10 wherein the submount has first and second transmission lines, the first transmission line being electrically connected between the first lead pin and one of the anode and cathode, and the second transmission line being electrically connected between the second lead pin and the other of the anode and cathode.

15 6. The semiconductor laser module according to claim 5, further comprising a stem block provided on the top surface of the stem base, wherein the submount is fixed on the stem block.

20 7. The semiconductor laser module according to claim 6, further comprising:

a bonding wire connected between the second transmission line and the other of the anode and cathode; and

25 a via extending through the submount between the second transmission line and the stem block;

wherein the stem block is electrically conductive, and

wherein the other of the anode and cathode is electrically connected to the stem block through the bonding wire, second transmission line, and via.

8. The semiconductor laser module according to claim 5, wherein the first transmission line includes a portion extending parallel to a portion of the second transmission line.

9. The semiconductor laser module according to claim 5,

wherein the laser diode has an optical axis, and

wherein the first and second transmission lines are symmetric with respect to the optical axis.

10. The semiconductor laser module according to claim 5,

wherein the submount has first and second legs extending parallel to each other, and

wherein the first and second transmission lines are disposed on the first and second legs, respectively.

11. The semiconductor laser module according to claim 10, wherein the first and second legs straddle the photodetector.

12. The semiconductor laser module according to claim 5, wherein a resistive element is provided in at

least either of the first and second transmission lines.

13. The semiconductor laser module according to claim 1, further comprising a ground lead pin for grounding the stem base,

wherein a depression is formed on the bottom surface of the stem base, and

wherein an end of the ground lead pin is attached to the stem base in the depression.

14. The semiconductor laser module according to claim 1, further comprising a cap attached to the stem base, a first sleeve for optical coupling between the laser module and an external optical component, and a second sleeve for interconnection between the cap and the first sleeve,

wherein the second sleeve has a first portion placed near the cap and a second portion placed near the first sleeve, and

wherein an outside diameter of the first portion is smaller than that of the second portion.

15. The semiconductor laser module according to claim 1, wherein a guide groove is formed on the submount, and

wherein an optical fiber is placed in the guide grove, the guide groove having a depth at which the

optical fiber is aligned with the laser diode to achieve optical coupling.

16. A semiconductor laser apparatus, comprising:  
the semiconductor laser module according to claim

5 1, and

a driver circuit board for driving the laser diode of the laser module, the driver circuit board being electrically connected to the first and second input lead pins of the laser module.

10 17. A semiconductor laser apparatus according to claim 16,

wherein the laser module further comprises a ground lead pin for grounding the stem base,

15 wherein a depression is formed on the bottom surface of the stem base,

wherein an end of the ground lead pin is attached, in the depression, to the stem base, and

20 wherein the driver circuit board has a ground wiring to be connected to a ground potential, the ground pattern being in contact with the ground lead pin.

18. The semiconductor laser apparatus according to claim 16, wherein the driver circuit board is in contact with the bottom surface of the stem base.

25 19. The semiconductor laser apparatus according to claim 16, wherein the driver circuit board has a

flexible board used for electric connection between the driver circuit board and an external circuit.

20. The semiconductor laser apparatus according to claim 16, wherein the driver circuit board includes a terminating resistor for impedance matching.

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